

# PD Formats, Program Integration and On-Line Courses

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NCES NH GLOBE Partnership  
NSTA North America Regional Meeting  
March 17, 2010

# PD Formats

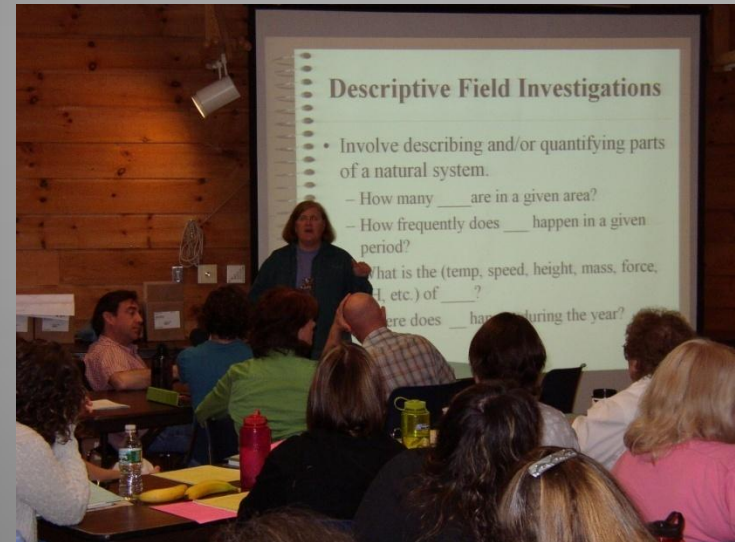
- ▶ Combining Elementary GLOBE and protocol training in 6 separate workshops
  - Creating and Studying Your School Site aka Student Research (Thursday/Friday)
  - Atmosphere (Friday/Saturday), (May 20/21)
  - Seasonal Change (March 5/6)
  - Earth System Science/Land Cover (January 21/22)
  - Hydrology (TBD)
  - Soil (June 3/4)



# PD Formats

## ► K-4 Teachers

- Friday night 4–7:30pm  
Elementary GLOBE
- Saturday morning 9–12:00pm
  - Observe and record observations about “sphere”
  - What questions do we have about this “sphere?”
  - What can we measure to learn more?
  - Researchable questions...what protocols do you want to learn?
  - Protocol training
  - What can we find out using the data?





# PD Formats

- ▶ 5–12 Teachers
  - Share morning session with K–4 teachers
  - 12:30–3:30pm Let's take it further
    - Advanced protocols/learning activities
    - Data analysis
    - Increase complexity of research questions



# PD Formats

Earth as a System/Land Cover GLOBE Workshop  
January 22, 2010

## Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- What kind of land cover did you see on the way in?
- Why would we want to study land cover?
- Name one way land cover changes over time.
- What do you want to know/study about land cover?

## Foundation Activities

- Orientation to how GLOBE 'numbers' pages
- [Land Cover/Biology Investigation at a Glance](#)
  - o [Introduction](#)
- Zoom by Istvan Banyai
- Side to Top Views
  - o [Odyssey of the Eyes Beginning](#)
  - o [Site Seeing Beginning](#)

## Field Work

- [Site Selection](#)
- [Investigation Instruments](#)
  - o Modified UNESCO Classification (MUC) System (pg. 1-12)
    - [Practice Examples](#)
    - [MUC System Glossary](#)
  - o Densitometer (pg. 13-14)
  - o Clinometer (pg. 15-18)
    - [Clinometer Sheet](#)
    - [Table of Tangents](#)
  - o Pacing (21.2 m = # steps = # of samples) (pg. 19-20)
  - o Tape Measure (pg. 21)
  - o Investigation Instrument Assessment (pg. 22)
- [GPS Protocol](#)
  - o Compass (pg. 7)
  - o [Field Guide](#)
  - o [Data Sheet](#)
- [Land Cover Sample Site](#)
  - o [Field Guide](#)
  - o [Data Sheet](#)
- [Biometry Protocol](#)
  - o Ground and Canopy Cover
    - [Field Guide](#)
    - [Data Sheet](#)
  - o Tree Height
    - [Simplified Height Field Guide & Data Sheet](#)
    - [Field Guide & Data Sheet](#)

## Classification

- [Bird Beak Activity](#)
- [Leaf Classification](#)

## GLOBE Intro Powerpoint

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Evaluations for K-4 Teachers/Lunch for 5-12 Teachers

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## Field Activity

- [Site Seeing Intermediate](#)
- [LC1: Connecting Parts of the Study Site](#)

## Earth as a System

- [RC2: Effects of Inputs and Outputs on a Region](#)
- Inputs and Outputs
- Closed vs. Open Systems
- [Poster Activities](#) (2007 and 1987 Posters and Activities)

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Evaluations for 5-12 Teachers

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# PD Format

## Seasonal Change GLOBE Workshop March 6, 2020

### Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- How do you know that the seasons are changing?
- How could you measure seasonal change?
- What do you want to know/study about seasonal change?

### Foundation Activities

- Orientation to how GLOBE "number" pages
- [Earth System Science Investigation at a Glance](#)
  - o [Introduction](#) (starting pg. 9-37)
- [Seasons and Phenology](#)
  - o [Introduction](#)
  - o [Introduction](#)
- [P1: Green-up Cards](#)
- [P2: A Sneak Preview of Budburst](#)
- [P3: A First Look at Phenology](#)

### Field Work

- [GPS Protocol](#)
  - o [Field Guide](#)
  - o [Data Sheet](#)
- [Budburst Protocol](#)
  - o [Budburst Site Definition Sheet](#)
  - o [Budburst Data Sheet](#)
- [Green-up Protocol](#)
  - o [Green-Up and Green-Down Site Definition Sheet](#)
  - o [Tree and Shrub Green-Up Data Sheet](#)
  - o [Grass Green-Up Data Sheet](#)
- [Hummingbirds Protocol](#)
  - o [Ruby-throated Hummingbird \(RTHU\) Site Definition Data Sheet](#)
  - o [RTHU Hummingbird Sighting Protocol Data Sheet](#)

Webster – [Budburst & Operation Ruby Throat](#)

GLOBE Intro Powerpoint

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Evaluations for K-6 Teachers/Lunch/PD Certificates

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## Seasonal Change

- [S1: What Can We Learn About Our Seasons?](#)
- [S2: What Are Some Factors That Affect Seasonal Patterns?](#)  
(Note: Use Seasons Background PowerPoint to cover major objectives of this activity and the previous one.)
- [S3: How Do Seasonal Temperature Patterns Vary Among Different Regions of the World?](#)  
(Note: This has some good descriptions of different ways to look at temperature data on the GLOBE website.)
- [S4: Modeling the Seasons for Seasonal Change](#)  
(Note: This is a difficult activity and there are probably better ones but the participants felt that the 3-D model of the Earth was helpful in discussions and could be used in many different ways. Good protractor for Earth's tilt.)
- In groups, teachers complete and discuss the following activities:
  - o [S5: Seasonal Change on Land and Water](#)
  - o [S6: Global Patterns in Green-up and Green-down](#)
  - o [S7: Temperature and Precipitation as Limiting Factors in Ecosystems](#)  
(Note: This activity involves pre-teaching and higher level vocabulary.)
  - o Topics to share with rest of participants:
    - Describe activity
    - Value to classroom
    - Any modifications or implementation points

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Evaluations for 5-12 Teachers/PD Certificates

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### Addendum:

- For Green-Down Concepts
  - o [P4: A Beginning Look at Photosynthesis: Plants Need Light](#)
  - o [P5: Investigating Leaf Pigments](#)
- [Green-Down Protocol](#)
  - o [Green-Up and Green-Down Site Definition Sheet](#)
  - o [Tree, Shrub, and Grass Green-Down Data Sheet](#)

<http://nhglobenetwork.ning.com/>

PD Format

Follow-Up

# Program Integration



## New Hampshire Education and Environment Team



The GLOBE Program



USDA Forest  
Service  
Conservation  
Education



# Program Integration

Scope and Sequence Models  
for Building Vertical  
Science Literacy



For use in the teaching of  
Atmosphere, Weather and Climate  
Water and Watersheds  
Ecosystems and Habitats

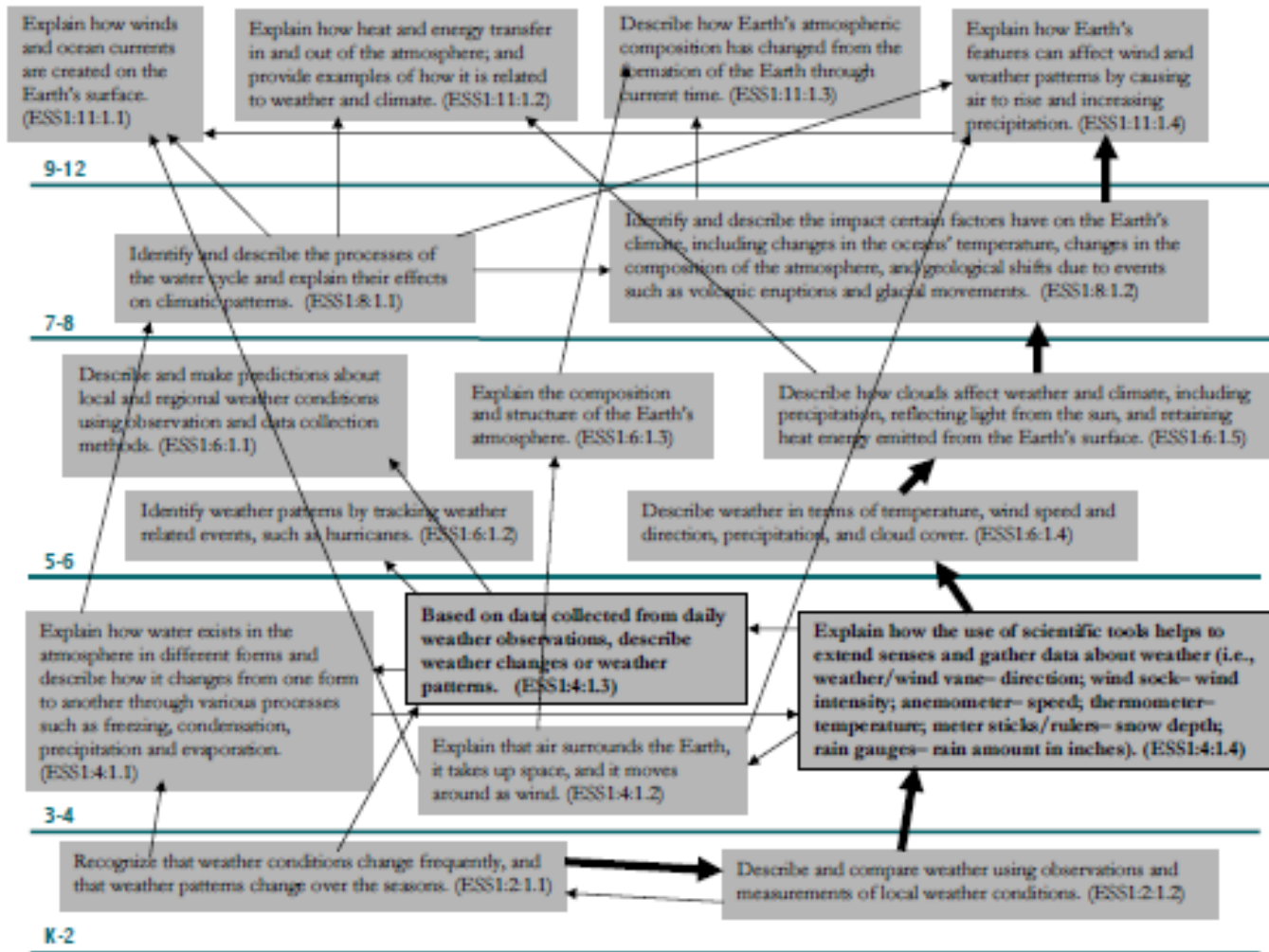
Prepared by  
NH Education and Environment Team

August 2007

# Program Integration

## Grade Level Expectations for ATMOSPHERE, WEATHER AND CLIMATE

ESS1: The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes.



# Program Integration

## Atmosphere, Weather and Climate Scope and Sequence

8.ESS1: The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes.

Kindergarten – Grade 2

**ESSENTIAL QUESTION: HOW IS THE WEATHER DIFFERENT FROM SEASON TO SEASON?**

Frameworks	Science Process Skills	Activities		Assessment
<b>ESS1:2:1.1</b> Recognize that weather conditions change frequently, and that weather patterns change over the seasons.  <b>ESS1:2:1.2</b> Describe and compare weather using observations and measurements of local weather conditions.	<b>SPS1</b> <ul style="list-style-type: none"> <li>• Making Observations and Asking Questions</li> <li>• Conducting Scientific Investigations</li> <li>• Representing and Understanding Results of Investigations</li> </ul> <b>SPS2</b> <ul style="list-style-type: none"> <li>• Nature of Science</li> <li>• Models and Scale</li> <li>• Patterns of Change</li> <li>• Form and Function</li> </ul> <b>SPS3</b> <ul style="list-style-type: none"> <li>• Collaboration in Scientific Endeavors</li> <li>• Common Environmental Issues, Natural Resources Management and Conservation</li> </ul> <b>SPS4</b> <ul style="list-style-type: none"> <li>• Information and Media Literacy</li> <li>• Communication Skills</li> <li>• Critical Thinking and Systems Thinking</li> <li>• Problem Identification, Formulation, and Solution</li> <li>• Interpersonal and Collaborative Skills</li> <li>• Self-Direction</li> <li>• Accountability and Adaptability</li> <li>• Social Responsibility</li> </ul>	Pre-Field Experience	<b>Morning Calendar</b> to track daily weather. Most elementary schools use this activity already to track the daily weather.  <b>Cloud Fun</b> (Elementary GLOBE). Students identify cumulus clouds and observe the weather on days when they see cumulus clouds.	<b>Cloud Fun</b> . Complete the Cloud Fun Student Activity Sheet.
		Field Experience	<b>The Colors of the Seasons</b> (Elementary GLOBE). Students observe the colors of the seasons and record them for comparison at the end of the school year.  <b>Adopt-A-Tree</b> (PLT). Students draw picture of a native tree and its habitat including the sky, clouds, etc. each season.	<b>The Colors of the Seasons</b> . Class discussion on colors that were found in each season.  <b>Adopt-A-Tree</b> . Students create a book or write an essay about their tree.
		Post-Field Experience	Students chart the number of days of each weather type per month and season. Share these data with another school in New England.	
		Culminating	<b>A House of Seasons</b> (WET). Students observe the role of water in each of the seasons.  <b>Adopt-a-Tree</b> (PLT). Students “adopt” a tree, deepening their awareness of individual trees over time.	<b>A House of Seasons</b> . Students draw seasons, sort pictures of different season, create a collage of seasons and/or compare water in each season.  <b>Adopt-a-Tree</b> (PLT). Students describe a tree, its relationships to its surroundings (in this case, the weather), and put together a book about the tree through the seasons.

### Project HOME extensions

- Plant native plant species that will provide habitat cover which will protect wildlife from weather.

### Integration with other subjects

- Art (drawing, colors) and Math (graphing, counting)

### Additional resources

- NatureScope's *Wild about Weather*, “Weather Scavenger Hunt” and “Weather Watcher” (National Wildlife Federation)

# Program Integration

- ▶ Building Vertical Science Literacy, A Math Science Partnership
- ▶ [http://www.nhplt.org/programs/math\\_science\\_partnership/](http://www.nhplt.org/programs/math_science_partnership/)
  - On the bottom of the page is the full, downloadable Scope and Sequence





# On-Line Courses

Welcome to the GLOBE Carbon On-line Course! (GLOBE Carbon Modeling On-line Course) - Mozilla Firefox

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google.com https://sites.google.com/site/globecarbonmodelcourse/globe-carbon-home?previewAsViewer=1

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## GLOBE Carbon Modeling On-line Course

**Welcome to the GLOBE Carbon On-line Course!**

Introduction Week (Feb 3-9)

Resources

Week 1 (Feb 10-16)

Week 2 (Feb 17-23)

Week 3 (Feb 24-March 2)

Week 4 (March 3-16)

Week 5 (March 17-24)

Week 6 (March 25-31)

Sitemap

### Welcome to the GLOBE Carbon On-line Course!

This is a 6-week online course for secondary science teachers, which will cover the following skills and concepts:

- Systems thinking
- Computer modeling
- Carbon uptake and storage in plants (Net Primary Productivity & Biomass)
- Climate factors that influence plant growth
- Comparing and contrasting carbon storage in different biomes
- Examining potential changes in carbon storage as climate changes
- Development of a research question

Participants will be expected to read and participate in an activity each week. You will also be expected to actively participate in the discussion forum by posting one thoughtful and original thread and at least two responses to other postings through the week. The final project will be a plan for implementing some or all of the material learned. After completion of your Final Implementation Plan and course evaluation, 30 PD hours will be granted. (CEUs will be available through University of New Hampshire Training and Professional Development). A grading rubric can be downloaded and will be sent to you each week with your updated score.

### Additional Resources (optional)

If this is your first time taking an on-line course, please visit this free on-line mini-course to learn a bit about "[Being Successful with Online Learning](#)" from OPEN NH.

Done

start

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Micros... Micros... C:\NR... Discus...

48° 11:25 AM Tuesday 3/16/2010

# On-Line Courses

## GLOBE Carbon Modeling On-line Course

Preview page as viewer

Search this site

Welcome to the GLOBE  
Carbon On-line Course!  
Introduction Week (Feb  
3-9)  
Resources

Week 1 (Feb 10-16)  
Week 2 (Feb 17-23)  
Week 3 (Feb 24-March 2)  
Week 4 (March 3-16)  
Week 5 (March 17-24)  
Week 6 (March 25-31)  
Sitemap

### Week 1 (Feb 10-16)

#### Reading

- NPP-Biomass Model Teacher Guide (NPP-Biomass Model\_TeacherGuide\_09-08-09.doc).
  - Includes:
    - The background information presented in the model story (**skip** this section because you will read the "model story" as an activity).
    - A 5E outline for suggestions on classroom implementation.
    - A preview of the activities you will complete as part of this course (found in the Elaborate section).
    - Sample questions that can be used for student assessment.

#### Activities

##### GLOBE Activity:

- iSee Player Tutorial
  - Download & install the iSee Player from [www.iseesystems.com](http://www.iseesystems.com).
  - Open and follow the iSee\_Player\_Tutorial.STM to learn about the model's functionality (Found in the "Tutorials" folder after downloading the iSeePlayer).
    - Notice how the tutorial relates model capability back to the systems concepts in the Paperclip Factory Analogy from the Introduction Week
    - **Note:** If you need assistance with download, installation, or opening the tutorial follow the directions on slides 6 & 7 of ModelingSlides.ppt (from last week's additional resources).
- NPP-Biomass Model Story
  - Unzip/decompress NPP-Biomass.zip
  - Open the iSee Player
  - File--> open NPP\_Biomass-Model\_1\_27\_10.STM
  - Print NPPModel\_Worksheet1\_1-22-10.doc
  - Follow the instructions on Worksheet 1.

##### Implementation Guide:

- Complete Part 1 of the Implementation Guide.

#### Discussion

In the discussion board (<http://groups.google.com/group/globe-carbon-modeling-on-line-course>), post one original thread to answer the following question(s). Also respond to two other posts from your classmates.

- What is one concept or understanding you gained from this week's reading or activity? What is a lingering question you still have?

#### Additional Resources (optional)

- Websites/Resources - Biome Definitions & Global Biome Map:
  - World Wildlife Foundation <http://www.worldwildlife.org/science/ecoregions/item1267.html>
  - Olson, D.M. et al. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. BioScience. Vol 51(11), 933-938.

#### Attachments (3)

NPP-Biomass Model\_TeacherGuide\_09-08-09.doc - on Feb 1, 2010 3:37 PM by Sarah Silverberg (version 1)  
756k [Download](#)

NPPModel\_Worksheet1\_1-22-10.doc - on Jan 29, 2010 11:40 AM by Sarah Silverberg (version 3 / [earlier versions](#))  
32k [Download](#)

NPP\_Biomass-Model.zip - on Mar 5, 2010 11:36 AM by Sarah Silverberg (version 2 / [earlier versions](#))  
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### GLOBE Carbon Modeling On-Line Course

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<a href="#">★ wizard</a>		3	Liz (2 authors)	Mar 12
<a href="#">★ comparing NPP/biomass and climate change in 3 biomes</a>		4	Liz (3 authors)	Mar 12
<a href="#">★ Comparing Biomass</a>		4	Angela Delaney (3 authors)	Mar 12
<a href="#">★ Resource for finding anticipated temp and precip changes</a>		2	Angela Delaney (2 authors)	Mar 12
<a href="#">★ Rough draft of Implementation Guide</a>		1	Allyson Bacht (1 author)	Mar 9
<a href="#">★ Week 4 Extension!!!</a>		1	SarahSilverberg (1 author)	Mar 9
<a href="#">★ Something very interesting...</a>		1	Allyson Bacht (1 author)	Mar 9
<a href="#">★ week 3 comments</a>		1	solidag...@yahoo.com (1 author)	Mar 7
<a href="#">★ {Carbon Modeling Course} ISEE system</a>		10	Debra Kimball (6 authors)	Mar 7
<a href="#">★ Carbon This Week!</a>		1	Jennifer Bourgeault (1 author)	Mar 4

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# On-Line Courses

- ▶ MSP Follow-Up
  - 3–4 week courses
    - Week 1: Related Reading/Video
    - Week 2: Discussion
    - Week 3: Implementation Plan
    - Week 4: Final Plan
  - Courses
    - Inquiry-Based Learning
    - Science Notebooks/Journals
    - Data Sets/Data Analysis/Using Data







Just Posted:

GLOBE Carbon Cycle Workshop  
August 17-19, 2010